

### **REMARKS**

In the Office Action, the Examiner rejected claims 1-15, 18-33, 36-39, 42, 43, and 46-48. By this paper, Applicants have amended claims 1, 20, 38, and 46-48 to clarify certain features. These amendments do not add any new matter. Upon entry of the amendments, claims 1-15, 18-33, 36-39, 42, 43, and 46-48 remain pending in the present application. In view of the foregoing amendments and following remarks, all pending claims are believed to be in condition for allowance.

### **Rejections Under the First Paragraph of 35 U.S.C. § 112**

The Examiner rejected claims 1-15, 18-33, 36-39, 42, 43, and 46-48 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Specifically, the Examiner stated:

Claims recite the limitation that the chemically treated solid oxide is substantially free of *zirconium* and *chromium*. Any claims containing negative limitation which does not have basis in the original disclosure are rejected under 35 U.S.C. § 112, first paragraph for failing to comply with the written description requirement. *Ex Parte Grasselli*, 231 USPQ 393 (Bd. App. 1983), *aff'd mem.*, 738 F.2d 453 (Fed. Cir. 1984).

Office Action, p. 2 (emphasis added). Applicants respectfully traverse this rejection. The Examiner stated that present specification discloses “metal-treated solid oxide” and that “there is no disclosure of treatment of solid oxide with zirconium or with chromium.” *Id.* Initially, Applicants clarify that the claims expressly recite “a chemically-treated solid oxide” (not a metal-treated solid oxide, as indicated by the Examiner). Moreover, in the present specification,

zirconium and chromium are positively listed as alternatives for the solid oxide and, therefore, may be expressly excluded in the claims.

Indeed, the specification discloses that the solid oxide may have zirconium or chromium. *See, e.g.*, Specification, p. 28, lines 4-6 (“Usually the solid oxide comprises oxygen and at least one element selected from Al, B, Be, Bi, Cd, Co, Cr, Cu, Fe, Ga, La, Mn, Mo, Ni, Sb, Si, Sn, Sr, Th, Ti, V, W, P, Y, Zn, or Zr.”) (emphasis added). It is clear that the present written description expressly lists numerous metals, including zirconium and chromium, as options that may be included in the solid oxide formulations of the claims. Thus, the claim element “wherein the at least one chemically-treated solid oxide is substantially free of titanium, molybdenum, zirconium, chromium, and tungsten” recited in claims 1, 20, 38, and 46-48 is plainly a valid exclusionary proviso that finds full support in the specification. Again, “[i]f alternative elements are positively recited in a specification they may be explicitly excluded in the claims.” M.P.E.P. § 2173.05(i). It has long been held that an applicant is entitled to claim “less than the full scope of his disclosure.” *In re Johnson*, 194 U.S.P.Q. 187, 195 (C.C.P.A. 1971).

Applicants respectfully note that the Examiner’s reliance on *Ex Parte Grasselli* is misplaced. *See* Office Action, page 2. In *Ex parte Grasselli*, unlike the present case, no support existed in the written description for amendments to the claims that added negative limitations. The applicant (*Grasselli*) excluded elements that were not mentioned in the written description, as filed. *See Ex parte Grasselli*, 231 U.S.P.Q. 393, 393-94 (Fed. Cir. 1984). For example, *Grasselli* expressly excluded uranium from the claims but there was no mention (positive or

negative) of uranium or related components in the specification. *See id.* For this reason, the Board upheld a rejection under Section 112, explaining that the amendment to exclude uranium introduced a new concept. *Id.* In contrast, the present specification mentions both zirconium and chromium as alternative components in the solid oxide, and therefore, again it is entirely appropriate that Applicants amend the present claims to exclude these metals.

Further, Applicants respectfully note that *In re Johnson* is more applicable to the present case. In *In re Johnson*, the patent application specification at issue disclosed over fifty alternate choices that could be used for the precursor compounds. *See In re Johnson*, 194 U.S.P.Q. 187, 195 (C.C.P.A. 1971). The applicants specifically excluded two of these choices from the patent protection sought. *Id.* at 191. The court held that the applicants were entitled to limit the claims to those disclosed alternatives not covered by the prior art. *Id.* at 196 ("It is for the inventor to decide what *bounds* of protection he will seek.") (emphasis in original).

The Examiner also rejected 1-15, 18-33, 36-39, 42, 43, and 46-48 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement, asserting that the recited lower limit of 4 for the polydispersity index is not supported. Office Action, page 3. Applicants respectfully traverse this rejection. To the contrary, Applicants respectfully refers the Examiner to Resin C in Table 6 of Example 8 on page 88 of the specification, which lists a polydispersity of 4. Thus, the lower limit of 4 of the claimed range is supported by the specification and, therefore, the written description requirement is plainly satisfied.

Lastly, the Examiner rejected independent claims 1, 20, 38, and 46-48 under 35 U.S.C. § 112, first paragraph, asserting that “there appears to be no teaching that inventive polymers [in the specification] necessarily exhibit a lower limit of about 35 [for HLMI/MI ratio], as indicated in the instant claims.” Office Action, pages 3-4. Applicants respectfully disagree. The recited value of 35 is believed to be supported by the disclosed value of 37 (on page 88) and based on the context of the specification. *See In re Wertheim*, 191 U.S.P.Q. 90, 98 (C.C.P.A. 1976). Nevertheless, in the present Response, Applicants have amended the independent claims to change the value of 35 to 37 for the recited HLMI/MI ratio in an effort to advance prosecution of the present application. The HLMI/MI ratio value of 37 is expressly and literally supported, for example, in Table 6 of Example 8 on page 88 (see Resin C). For these reasons, Applicants respectfully request the Examiner withdraw all rejections under § 112, first paragraph, and allow the claims.

#### **Rejections Under 35 U.S.C. §§ 102(b) and 103**

In the Office Action, the Examiner made three rejections under 35 U.S.C. § 102(b) or, in the alternative, under 35 U.S.C. § 103, as listed below. The Examiner rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious: claims 1-15, 18, 20-33, 36, 38, 39, 42, 43, 46 and 47 over McDaniel et al., U.S. Patent No. 6,300,271 (hereinafter “McDaniel ‘271”); claims 1-15, 18, 20-33, 36, 38, 39, 42, and 43 over McDaniel, U.S. Patent No. 6,391,816 (hereinafter “McDaniel ‘816”); and claims 1-15, 18-33, 36-39, 42, 43,

and 46-48 over Collins et al., U.S. Patent No. 6,524,987 (hereinafter “Collins”). Applicants respectfully traverse these rejections.

### ***Legal Precedent***

Anticipation under 35 U.S.C. § 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). Every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Indeed, the prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989)(emphasis added).

Furthermore, if the Examiner relies on a theory of inherency, the extrinsic evidence must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *In re Robertson*, 169 F.3d 743, 49 U.S.P.Q.2d 1949 (Fed. Cir. 1999). The Examiner, in presenting the inherency argument, bears the evidentiary burden and must adequately satisfy this burden. *See id.*

Lastly, the burden of establishing a *prima facie* case of obviousness under 35 U.S.C. § 103 falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). To establish a *prima facie* case of obviousness, the Examiner must show that the

combination includes *all* of the claimed elements, and also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). Further, the Supreme Court has stated that the obviousness analysis should be explicit. *See KSR Int'l Co. v. Teleflex, Inc.*, 82 U.S.P.Q.2d 1385 (U.S. 2007) (“[R]ejections based on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

#### ***Deficiencies of the Cited References***

In formulating the rejections, the Examiner acknowledged that the three cited references are “deficient in characterizing the resulting polymer as recited in the instant claims.” *See* Office Action, pages 4-6. However, the Examiner then contended erroneously that “in view of the fact that the process of preparing the polymer is substantially the same as that recited in the instant claims, a reasonable basis exists to believe that the resulting polymer exhibits substantially the same properties and characteristics.” *See id.* Yet, the cited references do teach HLMI and MI properties, and the HLMI/MI ratios of the cited references are far outside the presently-claimed range.

Independent claims 1, 20, 38, and 46-48 recite that the claimed catalysts will provide a copolymer with “a polydispersity index ( $M_w/M_n$ ) greater than or equal to about 4 . . . [and] a

high load melt index/melt index (HLMI/MI) ratio greater than or equal to about 37.” Again, the cited references do teach sufficient information to compare the HLMI/MI ratio of the polymers formed by the catalysts of the cited references with the HLMI/MI ratio recited in the instant claims. For instance, McDaniel ‘271 discloses both the HLMI and MI values for polymers formed from the McDaniel ‘271 catalysts, thus allowing the calculation of the HLMI/MI ratio. In all cases, the HLMI/MI ratio taught by McDaniel ‘271 is outside of the presently-claimed range. Thus, it is not surprising that McDaniel ‘271 specifically notes that the disclosed catalysts “usually produce polymers with a low HLMI/MI ratio.” Col. 6, lines 18 and 19.

In contrast to the recited ratio, Examples 11-12 of McDaniel ‘271 provides a polymer having an HLMI/MI ratio of 21.6. Col. 9, lines 60-63. Examples 14 A, B, and 15 of the McDaniel ‘271 provides a polymer having an HLMI/MI ratio of 16.6. Col. 19, line 37. Examples 28-31 give a ratio of 16 and 17.9. Col. 12, lines 49 and 56. Example 38 in McDaniel ‘271 gives a ratio of 17.9. Col. 13, l. 48. Finally, Example 39 gives an HLMI/MI ratio of 19.1 and Example 40 gives a ratio of 25.7. Col. 13, line 61; col. 14, lines 7 and 8.

Likewise, the HLMI and MI values disclosed in McDaniel ‘816 in all cases give an HLMI/MI ratio outside of the presently-claimed range. *See* McDaniel ‘816, col. 18, lines 46, 47, 57, and 58. (disclosing in Table 2, Inventive Examples 11-12, HLMI and MI values that result in HLMI/MI ratios of 22 and 19). Furthermore, it should be stressed that the polymers disclosed in McDaniel ‘816 have a polydispersity (Mw/Mn) lower than 3 (2.5 and 2.7), outside of the claimed

range. Table 2. Lastly, the Collins reference characterizes the HLMI/MI ratio for a number of example polymers, none of which have a HLMI/MI ratio greater than 26, much less than the presently-recited lower limit of 37. Collins, col. 16, line 64; col. 17, line 24 and 30; col. 18, line 54.

The Examiner noted that “the examples [in Collins] correspond only to polymer prepared from one type of catalyst.” Office Action, p. 11. However, Applicants stress that Collins provides absolutely no indication that other Collins catalysts will provide higher HLMI/MI ratios, or even that such high HLMI/MI ratios are important. In the absence of such indications, or “blazemarks,” to guide one skilled in the art to make polymers having high HLMI/MI ratios, simply describing a large genus of catalysts that may or may not make such polymers is not sufficient. See *In re Ruschig*, 154 USPQ 118, 122 (C.C.P.A. 1967) (noting that in the absence of directions, simply disclosing a large class of compounds was not sufficient to make a particular species obvious). Further, the Examiner has not shown that the claimed HLMI/MI ratio is *necessarily present* in the teachings of Collins, as would be required to support an assertion of inherency.

In view of the foregoing, the cited references cannot anticipate nor render obvious independent claims 1, 20, 38, and 46-48, or their dependent claims. Accordingly, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. §§ 102 and 103, and allowance of all pending claims.



**Rejections Under 35 U.S.C. § 102(e)**

The Examiner rejected under 35 U.S.C. § 102(e) claims 1-15, 18-33, 36-39, 42, and 43 as anticipated by McDaniel et al., U.S. Patent No. 6,548,441 (hereinafter “McDaniel ‘441”); claims 1-15, 19-33, 37-39, 42, 43, and 46-48 as anticipated by Hawley et al. U.S. Patent No. 6,573,344 (hereinafter “Hawley ‘344”); claims 1-15, 19-33, 37-39, 42, 43, and 46-48 as anticipated by Hawley et al. U.S. Patent No. 6,667,274 (hereinafter “Hawley ‘274”); claims 1-11, 14, 15, 18-29, 32, 33, 36-39, 42, 43, and 46-48 as anticipated by Thorn et al. U.S. Publication No. 2005/0113243 (hereinafter “Thorn”); and claims 1-15, 18-33, 36-39, 42, 43, and 46-48 anticipated by Jensen et al. U.S. Patent No. 7, 041,617 (hereinafter “Jensen”). Applicants respectfully traverse these rejections.

***Deficiencies of McDaniel ‘441 and Thorn***

In formulating the rejections under § 102(e), the Examiner stated that since the process disclosed in McDaniel ‘441 and Thorn are “substantially the same as that recited in the instant claims, it is held that the resulting polymer exhibits the claimed properties.” Office Action, pages 7 and 9-10. Applicants respectfully traverse this contention. After all, the catalyst systems of the cited references are different (plainly *not* substantially the same) as that recited in the instant claims. For example, independent claims 1, 20, 38, and 46-47 recite “wherein the at least one chemically-treated solid oxide is substantially free of titanium, molybdenum, zirconium, chromium, and tungsten.” In contrast, McDaniel ‘441 and Thorn do *not* disclose that the solid oxide support is free of these metals. Instead, McDaniel ‘441 discloses that nickel is

present in the support but, again, provides no disclosure that the other metals recited in the present claims are not present. McDaniel '441, col. 10, line 65 – col. 11, line 2. As for Thorn, the reference lists all of the recited metals, but also provides no indication that any of these metals are excluded. Thorn, ¶¶ 128 and 129. Therefore, McDaniel '441 and Thorn cannot anticipate independent claims 1, 20, 38, and 46-48, or their dependent claims.

#### ***Deficiencies of Hawley '344***

Independent claims 1, 20, 46, and 47 recite contacting *ethylene* and at least one olefin comonomer with a catalyst composition under polymerization conditions to form a copolymer. Further, independent claims 38 and 48 recite that the composition will form a copolymer when contacted with *ethylene* and at least one olefin comonomer. In addition, claims 1, 20, 38, and 46-48 were amended in the previous Response to further clarify and emphasize that the copolymer is an *ethylene*-based copolymer, not a propylene-based copolymer as taught by Hawley '344. Hawley '344 discloses forming a copolymer of propylene and ethylene, wherein propylene is the primary monomer. Indeed, the amount of ethylene introduced into the polymerization zone is less than “1200 ppm per million parts of liquid propylene.” Hawley '344, col. 12, lines 55 and 56. To be sure, the Hawley '344 process and copolymers (and their properties) are different than that of the instant claims.

Further, independent claims 1, 20, 38, and 46-48 recite “wherein the at least one chemically-treated solid oxide is substantially free of titanium, molybdenum, zirconium,

chromium, and tungsten.” In contrast, Hawley ‘344 discloses that the solid oxide support may contain these metals. Hawley ‘344, col. 8, lines 39-41. However, as with the references discussed above, Hawley ‘344 provides no indication that the solid oxide is free of these metals. For these reasons, Hawley ‘344 cannot anticipate independent claims 1, 20, 38, and 46-48, or their dependent claims.

***Hawley ‘274 and Jensen***

In view of the previous amendment to the instant specification to claim priority to both the Hawley ‘274 and Jensen references, the foregoing rejections under section 102(e) based on these references are believed to be moot.

***Request Withdrawal of Rejection.***

In view of the foregoing, Applicants respectfully request withdrawal of the rejections under 35 U.S.C. § 102(e) and allowance of all pending claims.

**Conclusion**

In view of the remarks set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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